

CLAIMS

We claim:

1. A fusion peptide comprising,
a first sequence which promotes translocation of said fusion peptide across a
5 membrane, and
a second sequence that inhibits N-ethylmaleimide sensitive factor (NSF) activity.
2. The fusion peptide of claim 1 further comprising a third sequence that links said first
sequence to said second sequence.
3. The fusion peptide of claim 1 wherein said first sequence comprises the peptide
10 represented by SEQ ID NO: 1.
4. The fusion peptide of claim 1 wherein said second sequence comprises an amino acid
sequence from NSF.
5. The fusion peptide of claim 1 wherein said fusion peptide is a peptide selected from the
group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5,
15 SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.
6. The fusion peptide of claim 1, wherein said membrane is an endothelial cell membrane.
7. A method of inhibiting activity of NSF, comprising the step of
exposing said NSF to the fusion peptide of claim 1.
8. The method of claim 7, wherein said activity is disassembly activity of NSF.
- 20 9. The method of claim 7, wherein said activity is ATPase activity of NSF.

10. The method of claim 7, wherein said fusion peptide further comprises a third sequence that links said first sequence to said second sequence.

11. The method of claim 7, wherein said first sequence of said fusion peptide comprises the peptide represented by SEQ ID NO: 1.

5 12. The method of claim 7 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

13. The method of claim 7 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.

10 14. A method of inhibiting exocytosis in a cell, comprising the step of
introducing into said cell, using the fusion peptide of claim 1, a sequence that inhibits NSF activity.

15. The method of claim 14, wherein said fusion peptide further comprises a third sequence that links said first sequence to said second sequence.

15 16. The method of claim 14, wherein said first sequence of said fusion peptide comprises the peptide represented by SEQ ID NO: 1.

17. The method of claim 14 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

20 18. The method of claim 14 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.

19. A method of providing anticoagulant activity to a patient in need thereof, comprising the step of

administering to said patient the fusion peptide of claim 1.

20. The method of claim 19 wherein said fusion peptide further comprises a third sequence
5 that links said first sequence to said second sequence.

21. The method of claim 19 wherein said first sequence of said fusion peptide comprises the peptide represented by SEQ ID NO: 1.

22. The method of claim 19 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

10 23. The method of claim 19 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.

24. The method of claim 19, wherein said fusion peptide is administered prophylactically.

25. The method of claim 18, wherein said fusion peptide is administered therapeutically.

15 26. A method of decreasing the size of myocardial infarction in a patient in need thereof, comprising the step of

administering to said patient the fusion peptide of claim 1.

27. The method of claim 26 wherein said fusion peptide further comprises a third sequence that links said first sequence to said second sequence.

20 28. The method of claim 26 wherein said first sequence of said fusion peptide comprises the peptide represented by SEQ ID NO: 1.

29. The method of claim 26 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

30. The method of claim 26 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6,
5 SEQ ID NO: 7, and SEQ ID NO: 8.

31. The method of claim 26, wherein said fusion peptide is administered prophylactically.

32. The method of claim 26, wherein said fusion peptide is administered therapeutically.

33. A method of treating thrombosis in a patient in need thereof, comprising the step of administering to said patient the fusion peptide of claim 1.

10 34. The method of claim 32 wherein said fusion peptide further comprises a third sequence that links said first sequence to said second sequence.

35. The method of claim 32 wherein said first sequence of said fusion peptide comprises the peptide represented by SEQ ID NO: 1.

15 36. The method of claim 32 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

37. The method of claim 32 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.

38. The method of claim 32, wherein said fusion peptide is administered prophylactically.

20 39. The method of claim 32, wherein said fusion peptide is administered therapeutically.

40. A method of inhibiting exocytosis of Weibel-Palade bodies from cell, comprising the step of

inhibiting NSF activity in said cell by exposing said NSF to the fusion peptide of claim 1.

5 41. The method of claim 40 wherein said fusion peptide further comprises a third sequence that links said first sequence to said second sequence.

42. The method of claim 40 wherein said first sequence of said fusion peptide comprises the peptide represented by SEQ ID NO: 1.

10 43. The method of claim 40 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

44. The method of claim 40 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.

45. The method of claim 40 wherein said cell is an endothelial cell.

15 46. A method of transferring therapeutic compounds across cellular membranes in order to treat vascular and thrombotic disorders in a patient in need thereof, comprising the step of administering to said patient a fusion peptide, wherein said fusion peptide comprises,

20 a first sequence which promotes translocation of said fusion peptide across a membrane, and

a second sequence that inhibits a cellular process that activates vascular inflammation and thrombosis.

47. The method of claim 47, wherein said second sequence inhibits N-ethylmaleimide sensitive factor (NSF) activity.

48. The method of claim 46, wherein said fusion peptide is the fusion peptide of claim 1.

49. The method of claim 46, wherein said first sequence comprises the peptide represented by SEQ ID NO: 1.

50. The method of claim 46 wherein said fusion peptide further comprises a third sequence that links said first sequence to said second sequence.

51. The method of claim 46 wherein said second sequence of said fusion peptide comprises an amino acid sequence from NSF.

52. The method of claim 46 wherein said fusion peptide is a peptide selected from the group consisting of the peptides represented by SEQ ID NO: 2, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8.

53. The method of claim 46, wherein said cell is an endothelial cell.